<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V4251</td>
<td>TBE Buffer, 10X Molecular</td>
</tr>
</tbody>
</table>

Components:

| V425 | TBE, 10X (Tris-borate-EDTA) |
1 Identification

Product identifier
Trade name: TBE, 10X

Article number: V425

Application of the substance / the mixture Laboratory chemicals

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711
U.S.A.
1-800-356-9526 or (608)-274-4330

Information department: SDS author: Regulatory.Affairs@promega.com

Emergency telephone number:
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

Classification of the substance or mixture

GHS08 Health hazard

Repr. 1 H360 May damage fertility or the unborn child.

Label elements
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
Hazard pictograms GHS08
Signal word Danger

Hazard-determining components of labeling:
Boric acid

Hazard statements
May damage fertility or the unborn child.

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.
IF exposed or concerned: Get medical advice/attention.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
Trade name: TBE, 10X

Classification system:
NFPA ratings (scale 0 - 4)
Health = 0
Fire = 0
Reactivity = 0

NFPA ratings (scale 0 - 4)
Health = 0
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)
Health = *0
Fire = 0
Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Reproductive Hazard
Primary route(s) of entry: Oral
Target Organ(s): May cause behavioral changes

Other hazards:
This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures

Description:
The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances may be withheld as a Promega Corp. trade secret.

Dangerous components:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>77-86-1 2-Amino-2-(hydroxymethyl)-1,3-propanediol</td>
<td>10-15%</td>
</tr>
<tr>
<td>10043-35-3 Boric acid</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Additional information: For the wording of the listed risk phrases refer to section 15.

4 First-aid measures

Description of first aid measures
After inhalation: If the patient feels unwell or is concerned, obtain medical advice.
After skin contact: Generally the product does not irritate the skin.
After eye contact: Rinse opened eye for several minutes under running water.
After swallowing: If the patient feels unwell or is concerned, obtain medical advice.

Information for doctor:
Most important symptoms and effects, both acute and delayed None
Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents:
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture None known
**6 Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Remove persons from danger area.
Wear protective clothing.

**Environmental precautions:**

Dilute with plenty of water.
Do not allow to enter sewers/surface or ground water.

**Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to Section 13.
Ensure adequate ventilation.

**Reference to other sections**

See Section 7 for information on safe handling.
See Section 13 for disposal information.

---

**7 Handling and storage**

**Handling:**

**Precautions for safe handling**

Keep receptacles tightly sealed.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.

**Information about protection against explosions and fires:** The product is not flammable.

**Conditions for safe storage, including any incompatibilities**

**Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s)** No further relevant information available.

---

**8 Exposure controls/personal protection**

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

10043-35-3 Boric acid

<table>
<thead>
<tr>
<th>Limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term value: 6* mg/m³</td>
</tr>
<tr>
<td>Long-term value: 2* mg/m³</td>
</tr>
<tr>
<td>*as inhalable fraction</td>
</tr>
</tbody>
</table>

**Additional information:** The lists that were valid during the creation were used as basis.

**Exposure controls**

**Personal protective equipment:**

**General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.

(Contd. on page 4)
Wash hands before breaks and at the end of work.  
Pregnant women should strictly avoid inhalation or skin contact.  
Do not eat or drink while working.  

**Breathing equipment:**  
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.  

**Protection of hands:**  
Protective gloves  
Select the glove material considering penetration time, rate of diffusion and degradation time.  
It is recommended that the selected protective gloves be tested and approved under NIOSH or EU Directive 89/686/EEC and the standard EN 374 derived from it.  

**Material of gloves**  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.  

**Eye protection:**  
Safety glasses  
Use equipment for eye protection tested and approved under government NIOSH standards.  

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### 9 Physical and chemical properties  

**Information on basic physical and chemical properties**  

**General Information**  

**Appearance:**  
- **Form:** Fluid  
- **Color:** Colorless  
- **Odor:** Not determined  
- **Odor threshold:** Not determined.  

**pH-value at 20 °C (68 °F):** 8.3  

**Change in condition**  
- **Melting point/Melting range:** Undetermined.  
- **Boiling point/Boiling range:** 100 °C (212 °F)  
- **Flash point:** Not applicable.  

**Flammability (solid, gaseous):** Not applicable.  

**Ignition temperature:**  
- **Decomposition temperature:** Not determined.  

**Auto igniting:**  
Product is not selfigniting.  

**Danger of explosion:**  
Product does not present an explosion hazard.  

**Explosion limits:**  
- **Lower:** Not determined.  
- **Upper:** Not determined.  

**Vapor pressure:** Not determined.  

**Density:** Not determined.  

**Relative density** Not determined.  

**Vapor density** Not determined.  

**Evaporation rate** Not determined.  

**Solubility in / Miscibility with**  
- **Water:** Fully miscible.  

**Partition coefficient (n-octanol/water):** Not determined.  

---  

(Contd. on page 5)
Viscosity:
- Dynamic: Not determined.
- Kinematic: Not determined.

Organic solvents: 0.0 %
Water: 81.8 %

Solids content: 18.2 %
Other information: No further relevant information available.

10 Stability and reactivity

Reactivity: No further relevant information available.
Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

Information on toxicological effects
Acute toxicity:

LD/LC50 values that are relevant for classification:
- 10043-35-3 Boric acid
  - Oral LD50: 2660 mg/kg (Rat)

Primary irritant effect:
- on the skin: No irritant effect.
- on the eye: Irritating effect.

Sensitization: No sensitizing effects known.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:

Carcinogenic categories
- IARC (International Agency for Research on Cancer)
  - None of the ingredients are listed.
- NTP (National Toxicology Program)
  - None of the ingredients are listed.
- OSHA-Ca (Occupational Safety & Health Administration)
  - None of the ingredients are listed.

12 Ecological information

Toxicity
- Aquatic toxicity: Not harmful to the aquatic environment
- Persistence and degradability: Not available
- Behavior in environmental systems:
- Bioaccumulative potential: Not known
Mobility in soil: No further relevant information available.

Ecotoxicological effects:

Remark: Not available

Additional ecological information:

General notes:
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods

Recommendation:
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

| UN-Number | Not hazardous for transportation |
| DOT, ADR, ADN, IMDG, IATA | Void |

| UN proper shipping name | None |
| DOT, ADR, ADN, IMDG, IATA | Void |

| Transport hazard class(es) | None |
| DOT, ADR, ADN, IMDG, IATA | Void |

| Packing group | None |
| DOT, ADR, IMDG, IATA | Void |

Environmental hazards:

Marine pollutant: No

Special precautions for user: Not applicable.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

UN "Model Regulation": Void
### 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

#### Sara

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
<th>None of the ingredients are listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 313 (Specific toxic chemical listings):</td>
<td>None of the ingredients are listed.</td>
</tr>
<tr>
<td>TSCA (Toxic Substances Control Act):</td>
<td>All ingredients are listed.</td>
</tr>
</tbody>
</table>

#### Proposition 65

<table>
<thead>
<tr>
<th>Chemicals known to cause cancer:</th>
<th>None of the ingredients are listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals known to cause reproductive toxicity for females:</td>
<td>None of the ingredients are listed.</td>
</tr>
<tr>
<td>Chemicals known to cause reproductive toxicity for males:</td>
<td>None of the ingredients are listed.</td>
</tr>
<tr>
<td>Chemicals known to cause developmental toxicity:</td>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

#### Cancerogenity categories

<table>
<thead>
<tr>
<th>EPA (Environmental Protection Agency)</th>
<th>10043-35-3 Boric acid I (oral)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV (Threshold Limit Value established by ACGIH)</td>
<td>10043-35-3 Boric acid A4</td>
</tr>
<tr>
<td>NIOSH-Ca (National Institute for Occupational Safety and Health)</td>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

**GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

**Signal word** Danger

**Hazard-determining components of labeling:**
Boric acid

**Hazard statements**
May damage fertility or the unborn child.

**Precautionary statements**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.
IF exposed or concerned: Get medical advice/attention.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.
Safety Data Sheet  
acc. to OSHA HCS  

Trade name: TBE, 10X  

16 Other information  
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.  

Department issuing SDS:  
Promega Corporation  
Environmental Health and Safety Department  
2800 Woods Hollow Road  
Madison, WI  
Ph:(608)274-4330  

Date of preparation / last revision 07/04/2016 / -  

Abbreviations and acronyms:  
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: Internation Civil Aviation Organization  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
ACGIH: American Conference of Governmental Industrial Hygienists  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
NFPA: National Fire Protection Association (USA)  
HMIS: Hazardous Materials Identification System (USA)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
NIOSH: National Institute for Occupational Safety  
OSHA: Occupational Safety & Health  
TLV: Threshold Limit Value  
PEL: Permissible Exposure Limit  
REL: Recommended Exposure Limit  
Repr. 1: Reproductive toxicity – Category I  

* Data compared to the previous version altered.